**Classical Genetics Practice Long Response Question - Rubric**

Ms. Ottolini, AP Biology

Your answer must thoroughly and accurately meet each of the following requirements to receive full credit *(9 points total).*

|  |  |  |
| --- | --- | --- |
| **Requirement** | **Comments** | **Points Received?**  *(1 point per requirement)* |
| **Part A-** Your answer includes the correct genotypes of the parents (XEY and XeXe) |  |  |
| **Part A-** Your answer explains how the parent genotypes resulted in the F1 generation offspring phenotypes. (You may have included a Punnett square but it must be explained) |  |  |
| **Part A –** Your answer explains that this is a sex-linked (X-linked) trait because the offspring phenotype frequencies differ between the male and female offspring. |  |  |
| **Part A -** Your answer explains how a cross between F1 flies resulted in the F2 generation offspring phenotypes. (You may have included a Punnett square but it must be explained) |  |  |
| **Part B –** Your null hypothesis states that the F2 generation phenotype ratio should be 1:1:1:1 or 25% for each phenotype. |  |  |
| **Part B –** Your chi square value is approximately 2.0 (more specifically, 1.85). |  |  |
| **Part B –** You answer states that the critical value at three degrees of freedom and p = 0.05 is 7.82. |  |  |
| **Part B –** Your answer states that we accept our null hypothesis because our chi square value is below the critical value. |  |  |
| **Part C –** Your answer states that a mutation is a change in the DNA code. |  |  |
| **Part C –** Your answer identifies two types of gene or chromosomal mutations (ex: substitution, insertion, deletion, inversion, translocation, etc.) |  |  |
| **Part C –** Your answer explains how the DNA is changed for each of the two mutations you identified. |  |  |

**Total Score = \_\_\_\_\_ / 9 = \_\_\_\_\_**